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E. A. Earp

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Apiary of H. J. Ellis, Patutahi, Gisborne.

ISSUED MONTHLY

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National Beekeepers' Association of New Zealand.

The object of the Association is the improvement of the Beekeeping Industry and furthering the interests and prosperity of the Beekeepers throughout the Dominion. Membership is extended to any Beekeeper who is in accord with the aims and objects of the Association on payment of fees as follows:—1 to 15 Hives, 5/-; 16 to 50 Hives, 10/-; 51 to 100 Hives, 15/-; 100 to 200 Hives, 20/-; every additional 100, 5/- extra.

CONTENTS.

EDITORIAL.

In the November issue of the Journal we published the clauses suggested by the Committee appointed to deal with the question of regulating Apiary Boundaries, and asked that these be criticised pro and con. by those to whom this question is a vital one. First we will remark that, beyond the letters received from the members of the Committee, which numbered three, only one other came along, and that unfavourable to the suggested clauses. The criticisms published by the President and Mr. I. Hopkins were taken from other Journals, so the actual interest displayed in this reputedly vexed question is absolutely negligible.

In October, 1918, when writing on this question, we made the following remarks:—

"What grounds have we for asking for legislation? Is it a general practice? Does it occur every season in every district in both Islands? Is there an emphatic demand from all parts to have the practice stopped? We are bound to say, No!"

The same remarks will serve again, only at this period they are emphasised by the fact that after definite proposals had been drawn up by a Committee appointed at the Annual Conference, acting in conjunction with the officers of the Department, and put forward for comment from those who feel legislation necessary, the only response is one letter.

We submit there is no case made that the question is of vital importance to the industry, and the Executive cannot reasonably ask the Department to entertain the idea of framing legislation to meet the alleged grievance. If this matter of "Bee Piracy," as it is called, was in any way general, then we must have heard from the sufferers, who would be keen to find a remedy; but the "silence speaketh."

We believe we have given more space to the ventilation of this question than any other, and the evidence gained is that just now and again we hear of a case of unfair dumping, but there is no general urgent demand for legislation.

We suggest the matter be allowed to drop!

* * *

We would remind our readers that at the next Conference there is to be a competition for honey, and they are advised to save samples of their best for this purpose. Champion prizes will be given by the National Association, and the Government graders will be the judges.

* * *

The Executive have decided to purchase Badges of Association, and these are now on order from Australia, and may be expected some time during the next month. We have ordered 200, as we were not sure of the demand, and we should like the Branch Secretaries to enquire of their members as to requirements. They will cost between 2/6 and 2/9 each. Members not attached to a Branch can order direct from the General Secretary, who will reserve them.

* * * *

The shortage of beeswax is gradually hardening prices. In the Dunedin market report up to 2/6 per lb. is quoted, and we learn that 2/9 has been paid for good clean wax. We would strongly impress on our readers the necessity of saving all their wax, and not on any account to sell to manufacturers of polishes, as this means making the scarcity more acute. We must have a certain amount for foundation, and the supply at present is barely equal to the demand; so for your own sakes we advise that you either get your wax made into foundation or sell it to those who will use it for this purpose.

* * *

We hope to see a large number of our friends at Ruakura Apiary on Wednesday, 4th February, being the annual Field Day of the Auckland Provincial Branch. We are sorry that the meetings of the H.P.A. Directorate and the National Executive cannot possibly be held at the same time, as was arranged, but circumstances have arisen that have made this impossible. However, a good programme has been arranged, and we hope for a record gathering.

* * * *

We are afraid the unseasonable weather will militate against a successful season. Cold winds and snow in parts of the North Island in January! The flow in the Editor's district stopped just after Christmas, the cold weather necessitating fires in the house in the evenings. We do not remember such a summer, if we can call it such!

* * * *

Just as we were going to press, the following wire was received from the H.P.A.:

"First advance payment 1920 honey fixed as follows:—Light amber A and B, 6d. per lb.; medium amber, 5¼d.; third grade, 4½d. Also advise further payment at beginning of February on 1919 honey."

* * * *

Reviews.—We have received from the American Bee Journal a copy of "The Flower and the Bee: Plant Life and Pollination," by John H. Lovell, botanist, Editor to the "A B C of Bee Culture." This is the most interesting book on pollination we have read, and the reproductions of photos. of flowers, plants, &c., of which there are 119, are simply beautiful. To those who during the winter months want pleasant and profitable reading, we strongly advise them to secure a copy. The book is priced at two dollars.

"A B C and X Y Z of Bee Culture."—The 1919 edition of this standard work has been sent us by the Alliance Box Co., Dunedin. This work has now been increased to 850 pages, and the authors have given more articles for the novice and beginner, as well as an increase in the articles that will interest the advanced practical man. It is in fact what the authors state: "A Cyclopædia of everything pertaining to the care of the honey bee," &c. Owing to the adverse rate of exchange between here and America, the price has increased tremendously; but for all that the book is one of the very best to be obtained, and a few shillings extra should not be grudged.

Market Reports.

The Director of the Horticulture Division has received from the apiary instructors the following report concerning the honey crop prospects:—

Auckland.—The Auckland districts are suffering from the effects of an exceptionally dry season. This has considerably reduced the prospects of a good honey yield. The crop is likely to be below the average. Beeswax is still in demand, 2/3 per lb. being offered. Section honey is scarce; merchants are offering from 8/- to

9/- per dozen. This is double that obtained a few years ago. Bulk honey is bringing from 7d. to 8d. per lb.—G. V. Westbrooke.

Wellington.—The prospects of a honey crop in this district are as reported last month—that is, a fair average yield is anticipated. As far as can be gathered from various sources, rain would be a welcome factor in honey production in some parts just now; but, notwithstanding, the yield will probably be up to expectations. All honey is scarce just now, but the new season's crop will relieve the situation. Beeswax, 2/- to 2/3 per lb.—F. A. Jacobsen.

Christchurch and Dunedin.—The indications generally point to a good season. Latterly better weather has prevailed, and the bees are storing well. In some districts extracting has commenced, and the quality of the honey is excellent. It is anticipated that the surplus will exceed last season's. Prices are firm.—E. A. Earp.

Very little choice clear liquid is now offering, indicating that most of the beekeepers have marketed any reserved stocks from former seasons. At present the market is very lightly supplied with this quality, and prospects point to a general shortage during the next few months.

On the other hand, dark honeys have been fairly plentiful right through the year, and, not being in favour with grocers for bottling trade, have been hard to move off except at low rates. Latest quotations are:—Choice clear liquid Western, 7½d. to 8d. per lb.; good clear liquid Western, 6½d. to 7d. per lb.; dark, from 5½d. per lb.; beeswax, 1/10 to 2/- per lb.—Australasian Beekeeper, 15th Dec., 1919.

Beekeeping for Beginners.

[As these Instructions conform to the seasons in the Auckland Districts, an allowance must be made for difference in latitude North and South. Average bee-seasons in the extreme North are four weeks earlier, and in Southland three weeks later.—Ed.]

The droughty conditions ruling over most of the North Island will probably mean an early close of the main honey flow; in fact, in my own apiary, I am inclined to think the beginning of the end started on 6th January, as on that evening the musical hum of the fanning bees on the bottom board at the entrances of the hives was absent; the bees were all inside and fairly quiet. By the way, have you ever stood close to the hive on a summer's evening after the bees have had a good day, and watched the systematic change of the fanning bees? When I was a small boy in London, I used to be very interested in seeing the change of sentries outside Buckingham Palace: the squad coming on duty halts at the sentry-box; one of the squad stands facing the sentry, crosses his gun with him, a question is asked and answered, the relieved sentry takes his place in the squad, and off they march. I am always reminded of this scene when watching the fanning bees; they are all so busy fanning for dear life; suddenly out comes the relieving force, who seem to have a look round to see everything is in order, then by their own means of communication let the fanning bees know it is time for them to take a spell, and immediately they start fanning, the late workers slipping inside the hive. To me it is one of the most fascinating sights.

Whether the season closes early or not, the main honey flow usually ceases this month, and it is advisable to get the surplus off the hives as soon as possible. Do not leave any honey exposed, and in working at the hives do not keep them open longer than necessary, as there is a danger of starting robbing in the apiary, which is harder to stop than to prevent.

Remove any blocks that have been used for propping up the front of the hives; colonies that are not very strong should have the entrances contracted. Any hives that are split and allow an entrance or exit other than the main entrance should be closed up with anything handy, and the faulty hive replaced by a sound one as soon as possible.

Should you have a case of robbing, close the entrance so that only one bee can pass in or out at a time. Get two or three handfuls of long grass thoroughly wet, and place over the entrance, keeping it wet with a watering-can from time to time. If the hive is at all strong, they will soon recover themselves, and be able to hold their own. Another handy thing to stop robbing is a cloth saturated with a strong solution of carbolic acid placed right over the front of the hive. Bees dislike the smell of the acid, and keep away from it as much as possible.

When taking off the surplus honey, make a note of any hive where the bees are few in numbers, as this would indicate that the queen is old and failing. It is unwise to attempt to winter the bees with a poor queen, as they frequently die, and sometimes it means the loss of the hive.

You will be thinking of marketing your crop, so a few remarks on this question will not be out of place.

If you raise section honey, the lowest price you should ask at the apiary is the same as what the grocer is selling at. If you are supplying grocers, then 10d. each is fair value. Extracted honey in bulk should not be sold under 9d. per lb., the same price being asked at the apiary if customers bring their own containers; if not, the price of the containers should be added.

When the ruling retail price of a 2 lb. tin was 1/- to 1/2, we used to reckon about 4d. per lb. was fair value at the apiary. Now the retail price of "Imperial Bee Honey" is 2/6 for a 2 lb. tin, and if the H.P.A. is going to maintain the present price, it will want the co-operation of all those who have a surplus to dispose of. Even if you have only a small quantity to sell, get the fair market value, and you will be assisting those who have made it possible for you to realise the increased value to-day.

F. C. B.

District Reports.

WAIRARAPA.

I have to advise that, as beneficial rains have fallen lately, Wairarapa prospects for a fair crop are assured, providing we now get some good summer weather.

Mr. R. H. Nelson had the misfortune to lose twelve colonies by fire last week. Apparently he dropped a piece of smouldering fuel from his smoker, which set fire to the dry grass. In a few minutes the fire swept across the apiary, and had it not been for timely assistance, Mr. Nelson informs me that he would undoubtedly have lost over half his apiary.

We are advised that Mr. Ryland intends paying a visit to the district either this month or towards the end of next.

We appreciate the change in the style of the Journal, and would suggest as a further improvement that letters criticising, not the questions at issue but the men who write them, be placed in the waste-paper basket, and less that is personal be allowed to sully the pages of the Journal.

J. C. BENTON.

Box 47, Featherston, 15/1/20.

CLUTHA VALLEY.

At the last meeting, held at Tuapeka Mouth, a resolution was passed that the secretary write the General Secretary to place before the Executive the urgent necessity of the stricter enforcement of the Apiaries Act; also that the Apiaries Act be amended to prohibit the sale of honey produced in a diseased apiary.

It is hard to say how things are going to be down this way. The flow is on, but the weather is very unsettled—mostly cold and windy. Very few bees in this district are up to strength, as we could get no sugar to feed them.

H. N. GOODMAN.

[The question of prohibiting the sale of honey from diseased apiaries is impossible; it would mean one would have to go through all the brood chambers before extracting. For instance, our apiary was clean the last time we examined the brood chamber, and we have just finished what we are afraid will be the first and final extraction, and all the brood is below an excluder. Yet we would not guarantee there are no signs of disease until we examine the brood chambers, and if we find one hive, then some of that honey is in the tank, and could not be sold if your suggestion was carried out.—Ed.]

TARANAKI.

I missed my notes last month, and no wonder. Didn't I say something about "Lizzies" the month before. Broke a crank shaft since then—£10 job!

We are getting a lot of weather here, and it mostly consists of samples. We had frosts in December, as well as Mr. "Canterbury Tales," and have a hot, close day sometimes followed by hailstones, and then a week of wind. However, things are not so bad, and those apiarists who did not suffer from a sugar shortage and got their stocks strong are in a position to get a good crop owing to two weeks of good weather in December.

Generally speaking, there is about a half crop on the hives, and as we have just had heavy rain, we look forward to the next three weeks with a hope that the old westerly will give it a spell.

Re moving bees by rail, I should say it is of particular importance not to get a "K" waggon, as unless you travel with the bees and see that the door is kept open, some kind porter (in keeping with the regulations) will close it, and the bees will smother. I have moved some hundred of colonies on "L" waggons without one loss. Put them one on top of the other, and tack a cover loosely on top of the screen of the top rows, and don't put the tarpaulin on at all.

Can anyone tell me why our queen-breeders go so much for the colour strain? To my mind, the leather-coloured strain is miles ahead of the golden at anything (stinging in, perhaps). Goldens are certainly no use to me, as when we get a cold snap they cuddle up and desert the brood, and they are also inclined to get paralysis stricken.

H. R. PENNY.

Okaiawa, 15/1/20.

TAIERI.

This is a district which unblushingly registers five mean annual rainfalls per year; wherefore we claim that the weather these last three weeks has been worthy of Paradise Hollow or of the Valley of Avilion. Honey is flowing freely, puffing us with hopes of a crop. This moment, however, change threatens. Water underfoot, snow on the hills, ice in the air, all suggest that we have fallen down to the region of semi-annual days.

Ere this strikes your eyes in black and white, the one and only, the solely singular event of the year will, I think, be past;

but, please Fate, not forgotten. Important? But yes! The Taieri Field Day! Hitherto we have had but Government demonstrations. 1920 opens the new era. Were it possible to invent a startling psychic phenomenon, a type of retro-metempsychosis by which one could invite his friend to dinner yesterday, we should invite you all and sundry; but——.

Let us turn to subjects less volatile. We have no desire to transform this paragraph into a "Questions and Answers" column (1/6 per insertion; 2/- if booked), but listen! It is taken for granted that when a swarm issues, it is always accompanied by the old queen. The venerable father of our art stated that bees do nothing invariably. Now, does this recognised eccentricity go so far as to allow the old queen to remain behind, the swarm being marshalled by a virgin? Or, rather, does it often allow this to happen? It certainly happened here recently. How would our bee-masters explain it? Of course (need I tell you?) we have bee-masters here; the trouble is that they keep their glim well doused. One suggests that the swarm, as it issued, encountered a queen flying from another hive, and that the old lady could do naught but remain ignominiously behind. How's that? Anything better?

We wish you the best the New Year can bring, which is, I suppose, an overflowing measure of honey.

BASIL H. HOWARD.

The Honey Producers' Association.

We are very glad to learn that the past year's trading has proved very satisfactory, and the possibilities of expansion during the coming year are very bright.

Another addition to the Association's activities is the appointment of Mr. W. J. Jordan as outside representative. Mr. Jordan is a practical beekeeper, and whilst on active service, after being wounded, was appointed Sergeant-major in charge of the beekeeping classes at Etaples in France, and later as instructor at Sling Camp. Several hundred soldiers received instruction from him, and many of those now returned have identified themselves with the industry and the H.P.A. He also visited Major Norton and the Depot in Bristol, and is therefore thoroughly conversant with the methods adopted in handling our honey in England.

Mr. Jordan's duties will be to try and meet all beekeepers in the Dominion, help them with practical advice, and to obtain their requirements for appliances, and at the same time to keep in touch with merchants and storekeepers, with the object of boosting the Imperial Bee Honey. We understand that any persons or districts wishing a visit from Mr. Jordan, by writing the head office can probably have it arranged.

The General Manager, Mr. C. F. Ryland, was starting his southern trip on the 20th January, when he intends visiting Blenheim, Cheviot, Rangiora, Christchurch, Ashburton, Temuka, Oamaru, Mosgiel, Balclutha, Invercargill; also Masterton, Hastings, &c.

Dates and locations of meetings will be advertised in the local papers, and all beekeepers, whether shareholders or not, will be welcomed at such meetings.

We understand the advance payments for this season's honey have not been decided, but they will certainly be on a higher basis than last year. Full particulars will be sent to shareholders, also particulars re further payments on last year's honey during the next few weeks.

There can be no doubt that the beekeepers are to be congratulated on their Co-operative Association, and, given the loyal support of all shareholders, there is no reason to fear future competition.

A Word and a Warning.

As one interested in beekeeping, I should like to say a few words for the benefit of fellow beekeepers who are not fully conversant with the manner or methods employed in marketing our honey in the United Kingdom.

Whilst awaiting repatriation in England after the Armistice, I joined Sergt.-major Elliot's class on beekeeping, conducted under the soldiers' educational scheme. Our course of instruction included a visit to Bristol to acquaint us with the methods of distribution and packing of New Zealand honey by the Bristol and Dominions Producers' Association, who, I understand, market practically all our export honey.

Our class numbered about 20 "diggers," some beekeepers and some who intended taking up beekeeping on their return to New Zealand, and we all took advantage of the Bristol trip. We were met by Major Norton, manager of the Bristol and Dominions, who showed us over the Honey Depot and explained the different processes of grading, potting, and packing the honey to meet the requirements of the British consumer.

After our tour through the factory, we were most cordially entertained at dinner by the Major, when he gave a brief address on the honey trade since the Bristol and Dominions first undertook to act as agents for the N.Z. Honey Producers' Association.

Practically every pound of honey received from New Zealand is sold direct to the retailer under a registered brand stating the country of origin. What better arrangements could we have? I have heard of New Zealand butter being sold by dealers as Danish, which commands a higher price than our butter, which is almost equal in quality, if not as good, simply because similar marketing methods are not employed to protect the New Zealand producer. I also heard of another instance concerning one of New Zealand's leading brands of jam, where the producer did not get a fair return for his article owing to bad marketing arrangements. The jam in question was sold here in New Zealand to a firm of exporters, who sold it to a firm of London brokers. They in turn passed it on to the wholesaler, whose business is with the retailer. Then comes the consumer. Where does the producer come in? Every firm handling the jam made some profit out of it, and when one considers the number of middlemen handling it, there must have been a big margin of difference in what the producer got for it and what the consumer paid for it.

Now, I think this has a direct bearing on our honey industry. We are on the right path at present, but I know of several beekeepers who contemplate breaking away from their Honey Producers' Association and selling this season's crop to exporters in New Zealand, because spot cash prices are higher than the advance made by the H.P.A. If our honey is worth 8d. or more to the speculator, it is worth the same to us, if not more, because, with our own organisation and the marketing arrangements at our disposal and no middlemen to get a cut out of it, we must eventually get its full market value when sold. There is something in that old proverb, "United we stand; divided we fall," and I am positive every beekeeper and those not beekeepers who made these Bristol trips are impressed and convinced that we have everything in our favour, and our interests could not be better looked after if left in the able hands of Major Norton. Has it not been proved: what price did we get for our honey, say, in 1913, prior to the co-operative movement, and what price are we getting now? The question needs no answering, and I think it behoves every member of the H.P.A. to do his utmost and get those beekeepers who are not members to join up and support the Association for all they are worth. Now that we have established a reputation and demand for our honey, we should do all in our power to maintain this; but if our members break away from the Association for what they think is a monetary gain, we will find our organisation crippled, and with that gone, in a couple of years time we shall be at the mercy of the speculator, and compelled to accept any old price he chooses to offer. We surely hear enough nowadays concerning Meat Trusts and combines to warn us and to impress upon us that to market our own produce is the safest plan possible.

It takes a good deal to build up any business, but it does not take much to ruin it, and all the good we have done for ourselves during the past few years may be undone if our co-operative principle is disbanded.

In conclusion, I would ask other 'diggers' who were fortunate in seeing what I have seen and who have an abler pen than mine, to write a few lines on the co-operative movement, because I am sure it is the road to success. If not, let them endeavour to convince others that we have an established market for all the honey we can produce, and if the Association is supported, beekeeping in this country will always be a profitable industry.

Wishing all a prosperous and plentiful season.

D. M. NICHOLSON.

Canterbury Tales.

By E. G. WARD.

We are all liable to make mistakes, and although I seem to be especially unfortunate in this way, I must ask readers to make allowances, for I can't help myself sometimes. I wish to explain myself in regard to the paragraph in last month's "Tales" which refers to shares in the H.P.A. The paragraph makes it appear that I got 6½d. per lb. for my last year's crop and 6d. per lb. for some left from the previous year. The idea I wished to convey was that when I am canvassing people to take shares, I have been told that the inducement to take up shares is not sufficient, as "I got 6½d.," &c., &c. I expect I forgot to put inverted commas in my copy, hence this explanation.

There's food for very serious thought in that article, "The Honey Market." First of all, loss by leakage can be avoided if lids were soldered on after the honey is graded, and would be a cheap insurance against loss; but, say, what about packing honey in wooden boxes? I should say that the last has been said on the subject now!

By this time it is possible to give an idea of the honey crop prospects, and I feel pretty safe in saying the crop in the Ellesmere district will be a good deal less than last year—from one half to two-thirds of last year's return would be a fair estimate, I think. The weather has been unsettled all the season, and it would be almost a miracle to equal last year's crop now. I have not done any extracting yet (13th January), and although I have a few "skyscrapers," I would like to see more of them. I am not out of extra supers yet.

I'm curious to learn more about that invention of Mr. Benton's for incubating queen cells. The rearing of queens is a

most fascinating branch of our industry, and appeals very strongly to me; but whether it will be possible to turn them out "like clockwork," so to speak, remains to be seen. I have been told that although the raising of chickens by means of the incubator has enabled large numbers to be reared at a time, old "biddy" still holds her own even with some of the leading poultry farmers. I feel very doubtful if a patent would be a paying proposition, and hope Mr. Benton will not feel offended if I say "don't."

I have learned recently that that dreaded curse of beekeeping—foul-brood—has made its appearance in my district, and is within robbing distance of my bees. As I had a taste of it before coming to Lakeside, I need hardly say I feel very much concerned, and hope that any of the readers of these notes who have the slightest suspicion that their bees are affected will deal with it drastically at once. The late Henry Alley said that after having once had the experience, if he found only ONE cell affected, he would take the colony three miles away and destroy hive, bees, and everything the least likely to spread the infection. Make no mistake, it is a serious matter, and the only known effective treatment is what is known as the McEvoy treatment for the cure of foul-brood. Once more let me repeat what I said a few months ago: "We are not half frightened enough of that curse of beekeeping—foul-brood. Don't tinker with it."

I was not able to attend the last meeting of the Canterbury Branch of the National, held on 18th December, but Miss Mackay has sent me a report. It was decided to accept Mr. H. A. Johnstone's invitation to hold a Field Day at his apiary at Rangiora. The date will be announced later. The train can be taken to Rangiora, and conveyances secured to complete the journey. Five shillings should cover all expenses. Some honey was produced which made some of those who had eaten portions of the sample think they were "off to Kingdom come." Mr. Sillifant and a gentleman who was present from North Taranaki pronounced it unripe eucalyptus honey, and although not dangerous, it was decidedly unpleasant. The Taranaki gentleman, whose name Miss Mackay omitted to mention, gave an interesting account of the industry in his district. It would appear from his remarks that the "chief attraction" in his district is dark honey, foul-brood, and moths, South Taranaki being quite different. By the way, perhaps it is just as well that gentleman's name was omitted in case someone should be after his scalp!

I have received from the publishers—Messrs. Pender Bros., West Maitland, N.S.W.—a copy of the Australasian Bee keeper for 15th Dec., 1919. It is a very interesting number. There is a short article, with illustration, of "An Easily Made Safety Valve for Boiler of Steam Honey Knife." I don't think there is any "patent" about it, but a reproduction in our own Journal would, I think, be interesting and valuable to the fraternity. I speak rather feelingly on this subject, because I got my right arm very badly scalded last season, and might have been blinded through not having something of the kind on my steam generator. If ye Editor has not got the copy referred to, I will gladly send it on if he thinks it is "playing the game" to reproduce the article.

There are also some very complimentary editorial remarks about the N.Z.H.P.A., and an article in a humorous strain on "Mugs," by A. Shallard. I desire particularly to draw the attention of the N.Z. variety of "mug" to this article, especially as the genus has shown itself to be extending its operations, as witness the offer of honey to the B. and D. in last month's issue.

Fellow shareholders in the H.P.A., allow me once more to impress upon you the importance of loyalty to one another. Don't be "mugs."

The Metal Foundation.

[NOTE.—It must be understood that the following remarks are on a metal foundation invented by Dr. A. Z. Abushady, editor of the Bee World; this invention must not be confused with the aluminium metal comb or "Moneycomb," as they are now called, invented by Mr. McDonald, of America. The latter have proved a success so far, but are easily liable to damage by bruising the metal edges of the comb. To our thinking, the metal foundation has greater possibilities, as even if one meets with an accident and bruises the edge of the cells, these being wax, nothing serious has happened, and it seems to us a queen cell could not be cut from a metal comb without injuring the young queen, the metal foundation not having this drawback. There can be no doubt that an indestructible foundation would be an immense boon to the industry, and we shall watch future developments with great interest.—Ed.]

Sir,—You will no doubt have seen in the "British Bee Journal" for 13th November an account of a demonstration by Dr. Abushady with aluminium plates as comb foundation. I may say I was present at the demonstration, and can endorse the remarks made in the British Bee Journal.

I have taken the liberty of forwarding some aluminium sheets to the Ruakura Farm of Instruction for experimental purposes, for they may not be at present procurable in New Zealand. The thickness of the sheets is 30 B.W.G. (Birmingham wire gauge: the higher the number the thinner the gauge). I presume these, when put through foundation rollers, will be in

appearance similar to those I saw. I trust they will arrive in time for experiments to have been made by the time the Annual Field Day comes round.— I am, &c.,

W. HOOPER TEED.

The following is the report in the "British Bee Journal":—

THE METAL FOUNDATION.

As reported in our last issue, a demonstration of the Metal Foundation evolved and tested at the Research Apiary of the Apis Club, by its organising secretary, Dr. A. Z. Abushady, editor, "The Bee World," was given in the museum and library room of the B.B.K.A. on Friday, November 7th, between 2 and 4 p.m.

Although Dr. Abushady is a member of the B.B.K.A., the facilities accorded to him for the exposition of his experimental work are not by any means limited to members of the Association, whose traditions have always been the service of modern apiculture, irrespective of personalities. Members and non-members may equally depend on the sympathetic attitude towards progressive research of the oldest bee organisation in the country, which has always taken a leading part in every movement aiming at the true service of British bee culture.

In spite of the very short notice given of the conversazione and demonstration, there was a good gathering of beekeepers, including some leading men, who took sufficient interest in it to travel from the country for many miles.

The specimens presented were carefully scrutinised, and many searching questions were asked, which were fully answered. The meeting exhibited a spirit of open mindedness and keen interest in the rapid development of the question of hive equipment on scientific lines.

Space prevents us from giving a detailed report of the proceedings, but owing to the great importance of the subject, we have no hesitation as to giving, for the benefit of our readers, the following summary:—

Briefly stated, Dr. Abushady has demonstrated his success in proving, contrary to current teachings, that:

1. Wax is not necessary as a bait for bees in inducing them to build wax comb on artificial foundation.
2. The sense of touch of bees is far more acute than is generally appreciated.
3. Bees will build wax in what amounts to winter temperature if forced to do so, and should their numbers be sufficient for thick clustering.
4. It is possible to adopt such a practical compromise between the metal comb and the wax comb as the naked metal foundation.
5. The winter cluster of bees on combs, placed at right angles to the entrance, is generally central, as revealed by the margin line of wax building on the metal foundation, and, as confirmed by his observations (in the presence of witnesses) of bees wintering in his observatory hive, which was shown, apart from the rapid examination of several other colonies at temperatures below 40 deg. Fahr.
6. Bees are liberal in the utilisation of their wax scales, and, Dr. Abushady claims, they will not go to the trouble of "drawing out" the ridges of wax foundation, as is generally believed, but that they will crudely embrace these ridges with their secreted wax in starting to build up their comb on the artificial ridges of the foundation. He promised to present additional specimens in proof of this important point at a second demonstration to be held shortly.

The following deductions, he pointed out, clearly present themselves:—

1. It is sheer extravagance to utilise wax for foundation when durable metal foundation (preferably a non-poisonous aluminium alloy) will do equally well. And it is perfecty clear that if metal foundation has proved a striking success under the most unfavourable conditions, it should prove at least equally successful under average seasonable conditions. Hitherto, wax foundation alone has been utilised, and even when a metal core (as distinct from foundation) has been advocated in addition for the purpose of stability it has been coated with beeswax. But pure metal foundation is a new notion based entirely on experimental work, which now destroys the "wax bait" theory, which is supported even by the manufacturers of the McDonald aluminium comb, since they spray it with molten wax before placing it on the market.
2. If bees can so sensitively feel rounded borders of the embossed cell bases, and generally adhere to them despite rapid feeding, there is no logic in being too particular about creating sharp margins for these bases. The obvious lesson to be learnt from this is that **it is more advantageous to use a comparatively thick sheet of metal** (for the sake of durability) **and to produce round-margined cell bases, rather than have a thin sheet** (which may be buckled or easily damaged) **for the sake of securing sharp-margined ones.** Dr. Abushady is of opinion that bees will most likely respond also to grooved foundation, just as they respond to ridged foundation, their sense of touch being exceptionally acute.
3. Metal will not in any way prejudice wax building, and in fact this experimental work clearly opens the field for the introduction of other forms of foundation — e.g., wooden foundation, "bone" foundation, &c., although these will not compare with aluminium, for instance, which has the following advantages amongst others:—

Special.

(a) Indefinite durability with reasonable care;

(b) Sterilisation adaptability (by boiling);

(c) Cleanliness;

Joint.

(d) Economy of labour in fitting, &c., apart from economy of durability;

(e) The safety of bees in movement;

(f) The ability of removing drone cells and queen cells without destroying the foundation.

4. Those who believe in the beneficial effect of stimulating wax secretion to the utmost degree (a belief which Dr. Abushady does NOT share, especially as he contends that there are ample opportunities for wax secretion in an average hive in the hands of a modern apiarist, whether the hive is supered or otherwise, and even when metal combs are used) will find the metal foundation a true friend, who will permit them to force their bees to do as much wax secretion as they desire without extra cost in equipment. The beekeeper will at least be able to regulate more effectively the building of worker cells, and can thus secure a comb composed entirely of such cells.

5. From a practical standpoint there is hardly any dissipation of heat when metal foundation forms the basis of a comb used for wintering. We have seen excellent wax comb built on this very foundation in "winter weather," and it is logical to observe that the bees will be clustering on wax, which is a good non-conductor of heat, and that any heat dissipation towards the bases of the cells will be merely transmitted to the other side of the comb, where the bees are clustering. At its worst, such an insignificant dissipation of heat will merely help to equalise the temperature of the hive. As he disproves the "side-clustering" of bees except in cases of hives with non-protected entrances, the side dissipation of heat (should it ever occur in any appreciable degree) is not to be deplored.

6. As he shows that there is no gain whatever (whether economical, practical, or scientific) in the maintenance of wax foundation, except for sections, it is clear that metal foundation has a rightful place of universal adoption by those who prefer a wax comb to a metal comb.

Several illuminating questions were advanced relative to the metal comb, and were satisfactorily answered. Space prevents us giving additional notes, but we shall report on these questions in recording the proceedings of the second conversazione and demonstration, which will be devoted to the subject of the metal comb.

Oversea Settlement Commission and the Industry.

12th January, 1920.

To the Secretary,
National Beekeepers' Association.

Dear Sir,—Among the subjects which we desire to study in connection with our inquiry in New Zealand as members of the Imperial Government Oversea Settlement Mission, is that of beekeeping as an occupation for women, and we should greatly appreciate an expression of opinion on the matter from your Association and from the readers of your paper.

As you are probably aware, we are travelling through the country to investigate the possibilities for employment in New Zealand for all classes of women workers; but we are particularly concerned with the re-settlement of the women of the War Services who have served the country so well during the last five years.

Out of the 200,000 women who were enrolled, the members of the Land Army numbered some 20,000, and a considerable number of these girls, who have learned to love out-of-door work, now desire to come to one or other of the Oversea Dominions to seek a career.

The Oversea Settlement Committee, appointed by Lord Milner, Secretary of State for the Colonies, is concerned with the selection of applicants who desire to settle in other parts of the Empire, and it is the intention of the Committee to send out only those settlers who are physically fit and capable of undertaking the work they wish to do in the new country.

Bee-farming under New Zealand conditions appears to us to be an occupation which would appeal strongly to some of the Land Army women from Home; but we realise that it would be undesirable for a newcomer to start in the business without having gained a thorough knowledge of the subject in this country (New Zealand). This brings us to the question of training, and upon this point you will probably be able to furnish us with information. We are aware that instruction is given at the Government Farm at Ruakura, but excellent as this training is, it does not seem to meet the need of the girl who, having recently arrived in the country, and possessing but slender means, is forced to obtain a post where she is at least put to no expense for her board and lodging.

It is possible that bee-farmers might be willing to employ a few such women as cadets, giving them hospitality and some small remuneration for their work during a period of training. Your readers may be good enough to comment upon this suggestion, and let us know whether such a plan would prove practicable.

A few of the girls who choose this occupation may have some small capital, but training would be no less necessary in their case, and such as these would probably form themselves into groups later on, with a view to taking a plot of land and extending their activities in other directions.

We shall be most interested to hear from bee-farmers who would be willing to enter into any arrangement such as that suggested, and we should appreciate any information regarding local conditions and prospects for newcomers.

Letters will reach us safely through the Immigration Department, Wellington, throughout our tour in New Zealand.

We are,

Yours very truly,

(Signed) G. WATKIN.
F. M. GIRDLER.

Delegates Oversea Settlement Mission.
Auckland, 11th January, 1920.

Rotorua Branch Field Day.

The Annual Field Day of the Rotorua Branch was held at the apiary of Mr. F. E. Stewart on 11th December, and was attended by a large number of ladies and convalescent soldiers. Mr. G. V. Westbrooke, Apiary Instructor, took the lead, and his remarks, coupled with the demonstration at the hives, were followed with the keenest interest. It seemed quite a revelation to many of the visitors, to whom the inside of a hive was a mystery, that bees could be handled in the way they were. The various stages, from the egg to the perfect bee, were shown, also the queen and queen cells, which proved particularly interesting.

In the evening Mr. Westbrooke delivered a lecture on "Beekeeping in New Zealand," and his remarks were followed very keenly, particularly by the soldiers, to whom the industry offered great possibilities. At the close of the lecture, Mr. Westbrooke answered a great number of enquiries, and both he and Mr. Stewart were accorded a very hearty vote of thanks for the interesting and enjoyable day that had been spent.

Answers to Correspondents.

B. S. C., Waipukurau.—Good wishes heartily reciprocated.

C. M. S., Hope.—We haven't seen either blackbirds or sparrows catching and eating bees in this locality, but some larks were behaving rather suspiciously in our apiary this week, but whether they were catching live bees or picking up dead ones, we weren't able to tell.

D. C., Waiuku.—"With bees" and "without bees." If you ever get a chance, go to the grading store, and you will find that some beekeepers seem to think it necessary to have a few dead bees on the top of the honey. But it evidently isn't profitable, as the presence of these made a difference of 5/- per barrel in the quotation referred to.

Correspondence.

[The publication of any letter does not necessarily imply our agreement with the subject matter, and we do not hold ourselves responsible for the opinions expressed by correspondents.]

(TO THE EDITOR.)

Sir,—At the time of writing the weather is very wintry, and crop prospects are anything but rosy. There is a fine showing of manuka (ti-tree) in this district, also clover, but some real summer weather is wanted. We have had some late frosts—one late that "burnt" the clover flower. I divided three of my hives on the plan given by you in the November issue, which was very opportune, as I am only a beginner. All three divisions lost their first new queen, and I had to give each a frame of brood, so that they could go ahead with a new queen. Eventually I found signs in these hives that the new queen had commenced to lay, but the bad weather experienced in December no doubt accounted for the loss of the three first queens and the late start made by the second three queens. My notebook records that it was about Dec. 16th to 21st that these queens commenced to lay. I am mentioning these facts to show you the kind of season we have had so far. Still, there's February to come.

Now that I have managed to divide my colonies, will you tell me the most practical way to reduce swarming to a minimum. I have been able to keep one hive with a last year's (February) queen from swarming by breaking down queen cells every seven days.

I find the "Beginners" column of much help, and wish it were twice as long.—I am, &c.,

E. T. BATEMAN.

Swinburn street, Dannevirke, 15/1/20.

[The hives containing the young queens will not swarm, and we should pinch the head of the queen of the old hive, then break down all cells except the best one, and thus re-queen. Or, if you don't like killing queens, place one of your divided colonies with a laying queen in the position of this swarming colony, moving the old one to its place. This will throw all your flying (old) bees into the new hive, and the old hive will become less crowded, and probably cease building cells.—Ed.]

(TO THE EDITOR.)

Sir,—The following may be of interest to shareholders in the H.P.A. It was written by one of my friends residing near Bristol:—

"We had some New Zealand honey the other day from the Health Food Stores in Bristol. It is called 'Spur Brand' (a device of spur and whip on the jar). I see it is packed by the Bristol and Dominions Producers' Association. It is muscat flavour, whatever that means. Anyhow, it is delicious, and I like to think it may be the produce of your apiary. In the town here we can buy honey 'loose' by the pound, about 1/6 to 1/9. This muscat flavour pound jar was 2/6."

I am, &c.,

J. S. COTTERELL.

Manawaru, via Te Aroha, 6/1/20.

* * * *

(TO THE EDITOR.)

Sir,—I note your remarks on the matter of the occasional mating in the hive by queen bees. You are not strictly correct in your supposition that one occasion of such mating would be called a mutation, although, of course, it would certainly be a change. A mutation in Genetic phraseology means such a departure from the regular processes of heredity as would be permanently and inalterably inherited by such a mutation's progeny. The mere fact of a queen bee having mated under unusual environment would not necessarily (although it might) prove to be the result of a discontinuous variation, but the trouble at the present time is that we have so few among our ranks who recognise that to decide the matter it is necessary that careful breeding tests must be carried out with such queens as we recognise have departed from the usual custom.

Again, if such a queen should be bred from, we should not expect her workers to result in queens acting as their mother did, but that her drones would pass on the peculiarity to the workers, and that queens from those same worker eggs would again produce drones (but not workers) which would again pass on the mutation, the queens themselves acting in the unusual manner that their grandmothers had developed. Thus we should get a zig-zag inheritance. This fact should act as a caution to such as would be inclined to abandon an otherwise valuable line, because such alternating inheritance convinced them erroneously that the purity of the line had been lost.

Of course, there is always the equal probability that any such mutation would be of a complete nature. But in the cases we have had reported, such an event is scarcely likely to have occurred, because it is a well-defined law of discontinuous variation that such departures from the definite order of inheritance seldom or never affect one character only, but cause such a new shuffling of characteristics as to result in a new sub-species. It is this possibility of our obtaining entirely new varieties of bees that should inspire our progressive apiarists to be ever on the watch for any such departure from the ordinary, and to report the same, for a trained mind might detect a dozen valuable characters that to the untrained eye would be invisible.

Regarding your remarks as to the evils of in-breeding, if there is one thing more than another that science has disproved, it is the idea so long held by breeders that in-breeding was from every point of view harmful, however much a little of it upon rare occasions might have been found to do good. It is now known that vitality of constitution is a distinct and separate unit character, and so long as the in-breeder is careful to breed only from such individuals as show the characteristics he desires, combined with this vigour of constitution, he can do as much in-breeding as ever he chooses. Absolutely this must be the method adopted in any practice in the improvement of our bees. It is true that in-breeding practised with a brother and sister pair as a foundation line, and again breeding brother and sister, and so on, after about twelve to twenty generations, reduces the size of the litters, in the case of such life forms as produce multiple offspring, but just one out-cross restores this matter to almost its original status. With our bees, it would scarcely be necessary to adopt so intensively inbred a line, for we could easily use much wider relationship and still keep within our pure line.

The main concern for the members of the National Association is to send along such unusual queens, and then by careful in-breeding all new fixed characters can be classified, and, if advisable, combined in an entirely new strain. But how many among them will take the trouble?—I am, &c.,

H. BARTLETT-MILLER.

* * * *

(TO THE EDITOR.)

Sir,—Thinking there might be some of your readers who intend to make up beehives from petrol cases, I would like to give a few hints how to make a real substantial hive from these cases. I have never used any other, so have had some experience at the game. Now, the first thing is to get the cases sound and properly dry: then they should be carefully taken to pieces, and to do this go over them and give each nail a sharp clout with the hammer; this loosens the hold, and they can be removed quite easily by tapping the inside with a hammer. There is no need to spoil the nails by rocking the case about. Now, sort out the pieces off the sides, saving all those that are wide enough to cover the narrow side of the end pieces to be used for the outside of the super. Now, take your narrow pieces and nail lightly on the end pieces, building

up so as to give about one-quarter inch over, to plane off afterwards. The hives should be measured, so as to be just long enough for the frame in use to fit right inside, leaving about one-eighth inch play at the ends. The wide pieces should be nailed on the outside side of the first lot, so as to make a double wall. This gives you sides about one inch thick, with ends seven-eighth inch, which makes a far stronger and warmer hive than if only one thickness is put on. If there is any surplus wood, saw it off about a-quarter inch above your ends, and plane down just level with same; do not over-do the planing; it is better to have your super resting on the sides when placed one on top of the other than to have a space between. A small cleat should be nailed about half inch down the ends for the frames to hang on. If the supers are made just to fit the frames, three-eighth inch will be quite thick enough for these cleats. If they are too thick they will come against the end pieces of the frames, then the bees will glue them together, so that it takes a lot to shift them. The brands on the cases should be turned inside; they will look much better if this is done; also the side walls should be nailed together about halfway with one-inch nails; these should be driven through on to, say, an old flatiron so as to clinch them firmly. This saves a lot of warping. Use, say, a 2 or 2½ inch nail in nailing up the supers; they will stand a lot of knocking about if strongly nailed. Now, for hand-holds I find the best thing is ¾-inch auger holes bored nearly through the ends. The best bit for this job is one with a very fine screw and flange knives; this cuts a clean hole, and loses its grip as soon as the screw is through the wood. For covers, I use a flat roof covered with rubberoid or similar material. To make these, first make a square frame of, say, 1½ by 1 inch timber about ½-inch longer and wider than the super; nail any case timber you have over this. Saw off level all round, then nail pieces of light batten about two or three inch down the sides, and cover the lot with waterproof material. This makes what is called a telescopic roof, and is both waterproof and beeproof. Sloping roofs have a habit of warping up at one corner, and so let robbers in when they are not wanted. Bottom-boards should be made on the reversible plan, which is quite a simple job. Get some 1 by ¾-inch wood; cut two pieces, say, 5 inches longer than the super, and one piece long enough to make the same width of hive when placed between the two long ones. Nail light boards across these, placing the short piece of 1-inch timber at the back, so that the whole looks something like a washing-board. Cut the flooring off level with outside of frame, and nail some three-eighth stuff on underside in the same way as the one-inch frame on other side, and the bottom board is finished. This gives both a summer and winter entrance.—I am, &c.,

J. E. YEOMAN.

Homebush.

(TO THE EDITOR.)

Sir,—In reference to this very complex question of apiary boundaries which is open for discussion, I beg leave to present an opinion which may help to solve a very vital problem, and one which, if it becomes an established fact, will be far-reaching in its effects, and will establish a precedent which all other commercial enterprises are apt to follow, in which case a general "mix up" far worse than our present-day industrial unrest and its wilful contempt or legislation and of public opinion will be the inevitable result. While I cannot altogether accept the clause as drafted by the appointed Committee and the several officials of the Department while in conference, I also cannot indulge in such insulting, uncouth, and uncalled for remarks as were directed at the Committee by a previous correspondent, but would add a word of highest praise for them, for they have devoted valuable time and gone to considerable expense in a sincere effort to place the industry on a solid foundation, and the thanks of the beekeepers generally are due to them for the interest they have taken in this very difficult problem, which no doubt will shortly be solved for all time. It is a well-known and accepted fact that the ambitious instinct in the human race is one of the most predominant characteristics, and in a large number of cases this trait is very pronounced. We who do not indulge in extreme lines of meditation deplore the persistent efforts of the socialistically inclined to do away with all manner of ambition, and so keep each and every individual on a level with his neighbour. Up to a certain point ambition is the best asset any person can have, for one so imbued is proof against many ills, while ability to carry him to the height at which he aims will surely come to him as long as his ambition is sincere. Now, the person in question is an ambitious beekeeper whose ability has grown beyond the limit of his home apiary, and he, as a natural sequence, looks to enlarging the business by establishing out-apiaries, and so allow him more scope for his ability to attain his ambition. The law, however, says he cannot do so, because there are other beekeepers established within the radius of his intended extentions, so he must either be content to stay where he is, or as an alternative extend to some area many miles from home, where conditions for the judicious working of out-apiaries approach the impossible. These established men lack ability as well as ambition, but our degenerated socialistic legislation now protects the unskilled at the expense of the more competent—a state of affairs which in these days of enlightenment is quite out of order. The theory that a man has the estimated number of colonies in his yard that the immediate vicinity can carry will not hold water, because beekeeping, if properly undertaken, is not the easy light occupation which the Department of Agriculture quite erroneously impresses upon cadets and returned soldiers, but a very highly scientific

art, which, if applied by a man of experience, will yield far greater returns in any locality than another could obtain under like conditions. This being so, a person producing two or three tons of honey in a certain district, capable of producing eight or ten tons yearly under a more experienced man, is protected by legislation against the experienced man, who cannot even gather the balance of six or seven tons, which yearly go to waste on account of the established beekeeper's inability. The thing is quite absurd and impracticable, and I believe no Government would be so unjust as to penalise the competent for the benefit of the incompetent, and allow a vast amount of wealth to annually go to waste through unjust legislation unless we degenerate into holding the views of Socialism, and have the misfortune to be governed by an Administration equally degenerate. I have heard the argument put forward that certain would-be beekeepers will not undertake to go into the business and incur considerable expense thereby when there is no security for them from being crowded out by others. This, of course, is the case of one who, not having sufficient confidence in his own ability to succeed in the face of all the controlling influences of nature and the competition created by his fellows, would seek protection from the law. This appears to me to be a case for the individual to seek some other vocation if he cannot keep pace with others rather than to seek legislative protection, in an industry for which he is not adapted through lack of experience.

If we stop to consider for a moment how long an apprentice to any other branch of industry takes to become competent, we will find that five years of constant laborious work is necessary. How, then, is it possible for the Department to successfully train cadets for this line of business in a few months, and then encourage them to take up beekeeping and make a success of it? The system is quite worthy of a hailstorm of criticism, and if I may be pardoned for so suggesting does not overburden with credit those responsible for advising the Department. We as beekeepers must be prepared to accept competition from each other if it comes our way (I having already accepted mine), for it will do a lot towards bringing to light the best that is in us.

While I discountenance deliberate dumping to satisfy prejudice, I believe fair competition is good for all, but if we as an Association can obtain legislation to protect our individual members in the manner suggested, then it will not be out of place if the H.P.A. obtain like measures to protect its operations from the competition now offering by other merchants.—I am, &c.,

E. W. SAGE.

Ohaupo, 16/1/20.

[The above letter was received after our Editorial remarks had been sent to press.]

(TO THE EDITOR.)

Sir,—Would you kindly give a few recipes for making jam with honey instead of sugar. At present there is a lot of fruit going to waste owing to the scarcity of sugar, and I think a good opportunity for selling our honey is being lost sight of. I would like to see the H.P.A. establish receiving depots for grading and packing the honey, and all we would have to do would be to send it on, as they do with cream to the butter factories. I hope to see more of this scheme in your Journal, and less of the silly apiary boundaries question. At present I am not a member of the H.P.A., as the work of packing the honey for export gives me a very tired feeling whenever I think about it.—I am, &c.,

DRONE.

[We cannot find any recipes for making jam with honey. The following is the recipe for preserving fruit:—Prepare fruit as usual; put on to boil; when fruit is ready for bottling, add honey, about as much as one would use of sugar. Be sure and let the fruit just come to boiling point; but after adding the honey do not boil, as this is liable to damage the fine flavour of the honey. Have the jars ready, clean and very hot; put in fruit and seal.—Ed.]

* * * *

(TO THE EDITOR.)

Sir,—I should like to make a few remarks to complete yours about honey tins. Lids come off and honey gets spoiled in the damp, sweaty hold. Out of 50 odd cases I had last season, not one was right; all seemed to be built on the "toujours va qui danse" principle—all too long, many too narrow, and all too deep. They should be built on the jig line (a boat is built on the last), or like the tin itself is built, and the lid of the box should substantially press on the lids of the tins. Dadant's advocate a substantial division between the two tins. And lastly, why should not cases all of one size be loaded the same way as kerosene is loaded in New York—viz., on a platform, and the platform slung? Quicker much, and much safer.—I am, &c.,

STEPHEN ANTHONY.

Coromandel, 16/1/20.

Mr. H. W. Gilling says:—"The Beginners' Handbook should fill a gap in beekeeping literature, and command a ready sale." Post free, 1/7.

* * * *

"The easiest and best way to expand the chest is to have a large heart in it."—Backbone.

* * * *

The qualities rare in a bee that we meet,
In an epigram never should fail;
The body should always be little and sweet,
And a sting should be left in its tail.
—Chambers' Journal.

Bees and Beemen of Old.

By BASIL H. HOWARD.

(Continued from January issue.)

BATTLES AMONG BEES.

But the beekeeper must be wary; let him not hastily conclude that his bees are swarming when he sees them pouring out of the hive. Their purpose may be far from peaceful. Were it permissible here to rhapsodise or to indulge in poetics, I should wax eloquent on Vergil's description of these diminutive warriors. The average mortal, whose mental equipment has not been trained to probe deeply the nature of things, would see nothing but the prosaic superficial aspect of a battle in bee-land. Let an historian, imagination on fire, tell in burning words the tale of the stand of the Old Guard at Waterloo, or lose himself in the clouds when describing the shock and clash of world armies: but bees! . . . Oh, Gammon! Wherefore I shall pass over the section in which Vergil describes the martial clangor that arises in the hive, the blare of trumpets; the sharpening of stings; and the marshalling of the forces under the "king's" command; the sortie from the hive; the shock of the aerial conflict; the falling hail of wounded bees; the stubborn unyielding spirit of the troops and the high valour of the opposing "kings," who flash hither and thither inspiring courage. . . . Yet this mighty strife is ended, we are told, by throwing a little dust! The reason for this, says Pliny, is that the bees mistake the dust for the forerunner of a storm; someone else suggests that it resembles falling rain. These battles apparently spring from the presence in the hive of two "kings," but they do not, as seen above, decide the issue by single combat. The aspirants to royal power carry out a personal canvas; success lay with him who could win over the majority of the swashbuckling veterans in the hive. Pliny, however, points out that at times, especially when the food supplies are short, the bees tear down the royal cells before the rival kings can hatch.

To continue: The conflict over, you must find the two "kings," and carefully select the better; the rejected is reserved for execution. Vergil judges relative excellence in "kings" by colour and shape. The better of the two will be resplendent in a coat of golden mail and yellow spangles; the condemned will be shaggy and unkempt and the possessor of an extensive paunch. (It is noteworthy that Vergil here distinguishes in bare outline the Ligurian and the ordinary honey bee.) Columella notes two types of bee—the smooth and the hairy; in general, the former is the better. These distinctions apply equally to the workers.

FITS OF IDLENESS.

Sometimes the bees will be seen flitting aimlessly about sporting in the air; the combs are deserted and left to grow cold. The beekeeper will at once take steps to check this useless play by tearing off the wings of the "king," for the bees will not then be tempted to leave the hive. The practice of clipping the wings of a queen is not then any more than 2,000 years old! Columella too recommends the cruel system of "tearing" off the wings; he suggests that the operator smear his hands with balm before his entry into the hive. Pliny and one Didymus (a later writer) advocate cutting or clipping. Further measures against idleness are first the setting up near by of a statue of Priapus, the god of fertility, armed with a sickle and a waddy, to frighten birds and to keep thieves at a distance. Moderns might achieve the same end by setting up in the apiary an Efficiency Board in effigy. Still, the prime remedy is increased industry on the part of the beekeeper. Let him sharpen his spade, put an edge on his mattock, and set about planting a garden in the neighbourhood of the apiary. This will surely entice the bees out to work. Vergil does not state how long this garden will take to spring up; he means, of course, to impress upon his readers the necessity of personal industry. Naturally though when we see garden planting recommended as an antidote for idle spells, we recall the wondrous tale of "Jack and the Beanstalk."

There follows in Vergil an interlude on the old Cilician gardener whose honey was always first on the market. This old soldier of the armies of Pompey lived at Tarentum (Taranto), which ditsrict produced a large amount of honey. It is difficult to form any idea of the extent of the honey trade in ancient Italy and Greece. Probably it was far greater than we to-day are inclined to believe, for it must not be forgotten that honey in those days took the place of sugar. Rome drew its honey from many sources. Large amounts were no doubt produced all over the Italian Peninsula: but chief mention must be made of Liguria and Tarentum, and (we may look on Sicily as part of Italy) from Mount Hybla. Going further afield, I think we may justly mark Greece, especially Attica, as exporting the greatest amount to Rome. The district in Spain occupied by the Turdetani (say modern Seville) sent most of its honey Romewards. Lastly Sardinia contributed its supply to the hub of the universe; but Sardinian honey was of a low grade, harsh and bitter, for it was gathered from that strange herb whose taste produces those involuntary contortions of the facial muscles known as the Sardonic grin. (Note the Sardonic grin is no longer "a la mode" in polite society; it is reserved for the villain in our melodramatic novels.) Wax was also a commercial commodity imported largely from Spain and Etruria.

THE WONDERFUL COMMUNITY OF BEES.

Let us then pass on to the nature of bees: their remarkable instincts that have been the wonder of all ages were given them by Jupiter in reward for service. (We may as well give the story: The legend is that Saturn devoured his children knowing that one was to depose him; but his mother hid Jupiter in a cave on Mt. Dicte, in Crete, and the priests of Cybele drowned the cries of the infant by clashing their cymbals. Bees attracted by the sound provided the child with honey.) Bees alone of living creatures have a social organisation under which children, houses, and goods are held in common. (This is Vergil's statement, not mine!) Their life is subject to law. Each bee, at his allotted task, labours to store up food to support the hive in the winter. They are acquainted with the principle known as "division of labour." Thus they have a commissariat department, a board of works, a police system, and even a weather office (Winbolt). One might add to Winbolt's summary an education board. These terms, I think, need little explanation. The police force and the weather office are combined in Vergil. A squad is detailed to guard the entrance against intruders, to relieve incoming burdened bees of their loads, and to keep a watch on the clouds and signs of rain. . . . If you ever spent (on provocation I should say "wasted") any time on the study of economics, you will know that division of labour marks an advanced state of social life. Its existence among bees was noted by Aristotle. However, I can give no better illustration and commentary on Vergil than Shakespeare's "Henry V." (1/2/183).—

"Therefore doth heaven divide
The state of man in divers functions,
Setting endeavour in continual motion;
To which is fixed, as an aim or butt,
Obedience: for so work the honey bees;
Creatures that, by a rule in nature teach
The act of order to a peopled kingdom.
They have a king and officers of sorts,
Where some, like magistrates, correct at home;
Others, like merchants, venture trade abroad;
Others, like soldiers, armed in their stings,
Make boot upon the summer's velvet buds,
Which pillage they with merry march bring home
To the tent royal of their emperor,
Who, busied in his majesty, surveys
The singing masons building roofs of gold;
The civil citizens kneading up the honey;
The poor mechanic porters crowding in
Their heavy burdens at his narrow gate;
The sad-eyed justice, with his surly hum,
Delivering o'er to executors pale
The lazy yawning drone!"

A word about the drones. Vergil calls them "an idle throng," and says that the bees drive them out from the enclosure. Columella and Varro report that they are killed by the worker bees. Aristotle, however denies this. Pliny has more information:—They are forced to work; the shirkers are punished; they even aid in cherishing the young; but when the honey begins to ripen they are expelled, and even killed, for drones are seen only in the spring of the year. The ideal story is given by Aelian, who states that they are gently rebuked for stealing honey; but should the offence be repeated they are massacred at once. I shall have more to say anon of the ancients' idea of the purpose of drones.

All this hum of busy toil reminds Vergil of the forge of Vulcan down in the depths of Etna, where the sooty Cyclops work the roaring bellows, beat the metal on the clanging anvils, and plunge it white-hot into the sizzling lake.

(To be continued.)

A Bee and a Beetle.

It was one of those fascinating bits of natural history brought to light by that prince of entomologists and charming writer, Henri Fabre.

One of the earliest bees to appear in spring is a small black insect with a little patch of red on each hind leg. At first you would think it had been gathering red pollen; but if you look closely you will see the patch is a part of the bee itself, formed by tufts of red hair. A black bee with red patches on the hind legs! You can't mistake it; there is no other native bee like it. You will probably see it on the polyanthus flowers. If you watch it you will very likely see another bee, a brown one, hovering over it, and following it as it goes from flower to flower. This is the male pursuing the female. And the fact that they are so dissimilar in colour makes it again easy to recognise the species. About the same time of year a small brown bee may be seen in a similar manner rifling the polyanthus flowers. It also is shadowed, as it were, by a brown bee ready to pounce upon it. Again a male pursuing a female. Both of these belong to a small group of our native bees to which the name Anthophora has been given. For want of another we will continue to use this word.

It is a species of Anthophora which is associated in such a remarkable way with a minute beetle. Many beetles are parasites, but none in the matter of parasitism excels in wonder this parasite of the bee Anthophora. It is one of the blister beetles, the

precise name of which we need not trouble about. Fabre, in his wonderfully detailed and painstaking way, found out its extraordinary life history.

When the tiny beetle is hatched out in the autumn it is not as other young beetles are—a fat little grub, like the "worm i' the bud." It is an active creature with the proper insect supply of six legs. The first marvel in its life history, perhaps, is that it can do without food until it has met with its bee; and this will not be till the following spring. The bee Anthophora burrows in the ground in the spring and lays up stores of honey and pollen for her offspring. In each little store she lays an egg. The object of the beetle is to breakfast—a very long fast—on the egg, followed by unlimited honey. It arrives at the entrance of one of the numerous burrows of Anthophora. It is a sunny day in spring, and presently a male Anthophora emerges, and perhaps stays to sun himself at the mouth. The beetle is on the alert, and promptly attaches itself to some of the hairs on the bee. So the beetle is carried about by the bee. But still it seems no nearer breakfast. The male bee gathers no honey nor provides the desired egg. Soon, however, the female emerges from the burrows and seeks the flowers—perhaps the polyanthus flowers in your garden. They are sought out by the males, some of them carrying beetles. When the bees mate the beetle transfers itself to the female. By-and-by she goes to a little store that she has laid up, and lays an egg in the honey. The beetle then cleverly manages to drop off on to the egg. If it got into the honey it is said it would be drowned. Well, it eats the egg, and having done so it acquires the power of feeding on honey for the rest of its grub life.

Such is the story of the wonderful association of a bee and a beetle, as related by the brilliant Frenchman, Henri Fabre. If our natural histories were full—as they might be—of such wonders as this, then, surely the rush for them at the libraries would be as great as it is for popular fiction.—Chambers's Journal, July, 1919.

It goes Against the Grain.

I much regret that I am compelled to raise the prices of all the B.M. REDUCERS but the rise is compulsory if the business is to pay.

I have introduced into my business the new American method of "costing," which is the most perfect plan of finding out whether any particular line of manufacture is rendering a profit or not upon its manufacture. Many lines of business are nowadays run at either a loss or at so small a profit that it does not pay to carry it on.

The REDUCER BRANCH of my business was one such. When I and the expert had concluded our investigations, we conclusively proved that I was making only one and three-eighths per cent. profit upon my turnover, and nothing at all for my own labour.

No Beekeeper wants a brother vocationist to supply him with the apparatus of his Extracting Room at such a worthless margin of profit as this. As a class, Beekeepers can never be accused of innate meanness; on the contrary, they are rather noted for large-heartedness, and I feel sure that if I let down my prospective customers by giving them a full month's notice of the necessity for increasing prices, they will appreciate the endeavour to meet them halfway in a matter that is as irksome to the producer as it must be to the purchaser.

That being the Case

PRICES FROM THE 7th MARCH (a month ahead of which date will about see the Journal in each subscriber's hands) will be as follows:—

"Baby"	will be £4 10	instead of	£4 0 0
"Booster"	" 5 5	"	4 12 6
"Boon"	" 6 6	"	5 10 0
"Effective"	10 0	"	8 15 0
"Glutton"	" 15 10	"	13 10 0

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FURTHER.—IT MUST BE DISTINCTLY UNDERSTOOD THAT DELIVERY CANNOT BE MADE EARLIER THAN FIVE (5) WEEKS AFTER RECEIPT AT THIS END OF YOUR ORDER. WE ARE WORKING NOW OVERTIME & HOLIDAYS TO EXECUTE ORDERS, AND ARE AT OUR WITS' END TO OVERTAKE THEM. LABOUR IS ALMOST AS SCARCE AS ANGELS' VISITS, AND PRICES OF EVERYTHING THAT ENTERS INTO OUR WORK ARE SOARING EVERY DAY RATHER THAN SHOWING ANY TENDENCY TO A REDUCTION IN PRICE; WHILE DELAY IN OVERSEAS ARRIVAL OF IRON IS A FURTHER CAUSE OF SLOW DELIVERY.

H. BARTLETT BARTLETT-MILLER,

Thoroughwork Apiaries,

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[ADVT.]

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